Abstracts

Oral 6

Work and organisational and psychosocial factors I

O6.1 TIME PRESSURE AS A DETERMINANT FOR CHEMICAL EXPOSURE: EXPERIENCE FROM AN EPIDEMIOLOGICAL STUDY ON HEALTH EFFECTS FROM ACRYLAMIDE EXPOSURE AMONG TUNNEL WORKERS.

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Introduction: A major challenge in the prevention of health effects from exposures to chemicals in the working place is to identify important and modifiable determinants for the exposure in question. Organisational factors, such as time pressure and long working hours working may contribute to the pattern of exposure to chemicals, and thereby indirectly to adverse health effects.
Methods: We have recently reported health effects among 74 tunnel workers exposed to N-methylolacrylamide during grouting work. Group I (n = 24) was examined four and 12 months after cessation of exposure, and Group II (n = 50) was examined more than 18 months after last exposure. We measured nerve conduction velocities (NCV), visual evoked response (VER), and electroretinography (ERG) in both groups, in addition to chromosome aberrations in Group I and vision field and colour vision in Group II. Fifty non-exposed tunnel workers were selected as referents. Exposure was assessed by questionnaires, qualitative exposure indices, and measurements of haemoglobin adducts. Organisational factors were not systematically examined.
Results: The results indicated slight effects on the peripheral nervous system, which to some extent seemed to be reversible. Slight persistent effects were observed in the visual system for VER, ERG, and colour discrimination. Increased number of chromatid gaps, indicating a slight genotoxic effect was also observed. For Group I, very restricted time schedules in all phases of the tunnel project resulted in lack of product information to the workers, insufficient worker protection, choice of a production process based on ''fast'' grouts leading to unnecessary use of acrylamide-containing agents, in addition to long working hours for the tunnel workers.
Conclusion: Organisational factors, such as time pressure and long working hours, may represent important determinants for adverse health effects from chemical exposures. Such factors should be considered included into the design of epidemiological studies of chemical related health effects.

O6.2 IS WORKERS' COMPLIANCE WITH HEALTH AND SAFETY ROUTINES INFLUENCED BY SOCIAL AND ORGANISATIONAL WORK FACTORS? A MULTILEVEL STUDY

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Introduction: The objective of this study was to investigate the relations between workers' compliance with health and safety (H&S) routines adopted in the company (dependent variable) and social and organisational work factors. In accordance with the active learning hypothesis of Karasek and Theorell's Demands–Control–Support Model we had a hypothesis that high psychological job demands combined with high control or support would increase workers' compliance with the H&S routines. In addition, we wanted to test the hypothesis that a systematic H&S management system has a positive effect on the workers' compliance with H&S routines.
Methods: A cross sectional questionnaire study was performed among 1559 workers (75%) and the managers of 237 motor vehicle repair garages. The analyses were performed by multilevel modelling (HLM 5).
Results: At the worker level, a bivariate Pearson's correlation analysis showed significant and positive correlations between compliance with H&S routines and decision authority, social support, and H&S related management support, and a significant and negative correlation between compliance and demands. When the workers' subjective scores were analysed simultaneously with garage level factors in a multilevel random intercept and slope model, the positive correlations between compliance with H&S routines and social support and management support remained significant ($B = 0.03$, $p < 0.01$, $B = 0.40$, $p < 0.001$ respectively). The significant correlations of demands and decision authority was changed respectively to a non-significant and a significant negative correlation ($B = -0.03$, $p < 0.05$). At the garage level, mean management support and having a well developed H&S management system correlated positively with the workers' compliance with H&S routines ($B = 0.03$, $p < 0.05$, and $B = 0.10$, $p < 0.001$ respectively).
Conclusion: The active learning hypothesis of Karasek and Theorell was not confirmed in this study, but social and organisational factors still seem to influence workers' compliance with H&S routines. To increase workers' compliance with H&S routines it seems worthwhile to focus on support from co-workers and managers, and also on how the H&S management system is organised.

O6.3 SOCIOECONOMIC STATUS AND WORKING CONDITIONS AS PREDICTORS OF MENTAL HEALTH

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Introduction: The negative association between socioeconomic status (SES) and mental health is well documented. We hypothesise that psychosocial working conditions may represent one mechanism of that relation. The aim of this analysis was to evaluate the association of SES and working conditions with mental health among healthcare workers in one hospital and two long term care facilities.
Methods: A standardised questionnaire was distributed to all employees within the facility, with multiple mail and telephone follow up contacts. Worker demographics and job titles were obtained from the facility rosters; job title was coded by Standard Occupational Classification to assign Nam-Powers scores (SES score using census data on job level wage and education); other SES indicators were social position (SP) (education required to perform a job and level of responsibility within the institutional hierarchy), worker's education, and hourly wage. Data on working conditions were obtained at the worker level by questionnaire and at the job level by scales built with items from the O*NET database (US Department of Labor). Mental health was measured by the SF-12 Mental Component Scale (MCS). Multilevel linear regression analyses were conducted with a random intercept at the job level and forward stepwise variable selection: SES indicators first, followed by demographic variables, O*NET working conditions, and self-reported working conditions. Best fit was defined by statistical significance of coefficients and the log likelihood test of the model.
Results: Neither SES indicators nor O*NET based working conditions had significant linear associations with MCS. Job content questionnaire job strain was significant but was superseded by an indicator of imbalance between efforts and rewards (range = 1 to 4, $\beta = -1.081$, $SE = 0.435$, $p < 0.0001$). Work interference with family (range = 1.5 to 8.75, $\beta = -2.992$, $SE = 0.691$, $p < 0.0001$) and age (range 18.5 to 77.5, $\beta = 0.154$, $SE = 0.032$, $p < 0.0001$) were also included in the model.
Conclusion: Surprisingly, SES indicators were not associated with mental health after working conditions were taken into account. These results could justify an increased emphasis on mental health workplace interventions.

O6.4 FACTORS ASSOCIATED WITH WORK ABILITY OF CANCER SURVIVORS AND THEIR REFERENTS

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Introduction: Even though people are often able to continue working after the cancer diagnosis, there are studies which indicate that cancer survivors experience several mental and physical impairments in health as a result of the disease, which has been claimed to have long term affects on work ability. The aim of this study is to investigate whether the

self-assessed work ability of cancer survivors differs from that of people without cancer, and whether the survivors experience that cancer impairs their work ability.
Methods: The data were collected by questionnaire from 591 working aged people, with breast cancer, lymphoma, testicular or prostate cancer, and 757 referents. To assess work ability, we used parts of the Work Ability Index to measure the general work ability of cancer survivors and their referents. The General Nordic Questionnaire was used to evaluate the impact of social factors at work. In addition, we evaluated impairment in both physical and mental work ability of cancer survivors as a result of the disease.
Results: The mean values of work ability were nearly the same among the cancer survivors and their referents. In both groups, people with a higher educational and occupational status had better work ability than the others. Moreover, being older or having other chronic diseases lowered work ability. In addition, better working atmosphere and higher commitment was related to better work ability. Impairments in physical work ability of cancer survivors were related to age among women, and education among men. Having other diseases or chemotherapy lowered both physical and mental work ability in both sexes. Finally, people, who were satisfied with working atmosphere and co-workers' social support were least likely to report impairments in mental work ability.
Conclusion: In general, cancer did not seem to have a great impact on work ability in this population, even though cancer survivors who had also other illnesses, and had had chemotherapy experienced impairment in their work ability.

O6.5 OCCUPATIONAL INJURY RATES IN RELATION TO SOCIOECONOMIC STATUS AND HOSPITAL WORKING CONDITIONS

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Introduction: Injury occurrence has been reported to be higher among those with lower socioeconomic status (SES). We hypothesise that physical and psychosocial working conditions may mediate that relationship, at least in part. We examined this question using administrative data from two moderate sized community hospitals.
Methods: The study population comprised all workers at least 18 years old. Administrative data abstracted from workforce rosters included job title, department, hourly wage, hours worked per week, date of hire, and demographic characteristics. Each job title was classified as to socio-economic position (SEP) according to a five category scheme developed by the study team that primarily reflected worker's education and level of responsibility in the hospital hierarchy. Job features (ergonomic, psychosocial, organisational) identified as injury risk factors in previous research were identified and job ratings were extracted from the O*NET database (US Department of Labor). OSHA logs of occupational injuries and illnesses (1997–2001 for Hospital 1 and 1998–2002 for Hospital 2) were used to compute job specific incident rates; data were analysed as frequency records at the job level.
Results: There were 834 incidents among about 3100 workers in the two hospitals over five years. Injury rates and days lost were each inversely associated with SEP (all-injury crude RR = 3.6 (95% CI 1.7 to 7.8) for semiskilled workers compared with administrators) and in expected directions with 10 of 12 exposures examined (for example, negatively with noise, force exertion, and bending/twisting the body; positively with decision latitude and intrinsic/extrinsic rewards). Many of these exposures, in turn, were correlated with injury rates. The SEP injury association was substantially diminished after adjusting for five exposure conditions, especially psychosocial factors. In a multivariable model that included decision latitude and force exertion, the RR estimate was only 1.1 for lowest versus highest SEP.
Conclusion: Despite likely misclassification of exposures and under-estimation of injuries, there was evidence that the strong association of injury risk with SEP is mediated at least in part by psychosocial and physical features of the work environment.

O6.6 PSYCHOSOCIAL FACTORS AT WORK AND MYOCARDIAL INFARCTION RISK AMONG WOMEN IN KAUNAS, LITHUANIA

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Introduction: The psychosocial factors at work play an important role in the wellbeing of the employees. Women are an especially sensitive target group because of their double role situation: family and job. The aim of the present study was to assess the associations between psychosocial work characteristics, measured by means of the Karasek's Demand-Control Questionnaire, marital stress and first myocardial infarction risk in the 35–64 year old female population in Kaunas, Lithuania.
Methods: We conducted an epidemiological case control study among full time working women in Kaunas. Cases were 159 women 35–64 years of age with a first non-fatal myocardial infarction diagnosed in 2001–04, and controls were 484 women in the same age group randomly selected in the study base. Cases and controls were interviewed according to the standardised questionnaire. We used a translation of the short Swedish version of the Demand-Control questionnaire for the measurement of the psychosocial work environment. We used the logistic regression analysis for an estimation of the odds ratio of developing myocardial infarction in respect to psychosocial job categories, marital stress, controlling for possible confounders.
Results: The age adjusted odds ratio of myocardial infarction for women in passive jobs (low demands-low control) was 2.20; 95% CI 1.44 to 3.37 as compared with the rest of the working women. Marital stress increased the risk by 1.81; 95% CI 1.06 to 3.12. In the fully adjusted model, that included age, marital status, education, occupation, psychosocial job characteristics, marital stress, smoking, blood pressure, body mass index, the odds ratio passive jobs was 1.83; 95% CI 1.17 to 2.88, for marital stress 1.93; 95% CI 1.08 to 3.45, for smoking 1.50; 95% CI 1.00 to 2.25, for arterial hypertension 3.85; 95% CI 2.58 to 5.76.
Conclusions: Women in the psychosocial work category characterised as low demands-low control were at highest risk for the development of the first myocardial infarction. Marital stress played important role in the occurrence of the disease. Work organisational measures should be directed towards better understanding of the women's social position as wife and mother in the family and good employee.

O6.7 A CASE CONTROL STUDY WITH CROSSOVER DESIGN OF PATIENTS IN A REGISTER OF MYOCARDIAL INFARCTION AND REGISTERED URBAN POLLUTION DATA

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Introduction: There is evidence that both occupational exposures to airway irritants and environmental exposures to general pollution can lead to a systemic response with increased blood coagulability, and thus an increased risk of myocardial infarction. The aim of the present study is to see whether exposure to urban air pollution leads to an increased risk of myocardial infarction.
Methods: At the Department of Cardiology we have since 2001 had a register of myocardial infarctions. For this study all incident (first time) myocardial infarctions living in Trondheim have been selected as cases. The information includes sex, age, day of diagnosis, smoking habits (yes/no/ex), and the postal code of their residence. Since 1998 we have daily measurements of nitrogen oxides (NO and NO_2), and particles (PM10 and PM2.5) from 2–3 stations around the city. Exposure data for each case will be registered for the last fortnight before he or she was diagnosed, and for a similar period one month, two months, and one year (in order to avoid seasonal variations) before that.
Analyses: We have approximately 900 cases of myocardial infarction for analysis. For each exposure period we will look at the data as mean values and maximum and minimum values, as well as with regard to changes in exposure within each period. Analyses can also be made within strata of age, sex, smoking habits, and place of residence.
Discussion: With this simple design making the best of existing ''objective'' data both for the determinants and the outcome, the method may be an effective way of studying relations between occupational and environmental exposures and common diseases. With the use of the patients as their own controls in a crossover design, it is also an advantage that common confounding factors are ''automatically'' taken care of.